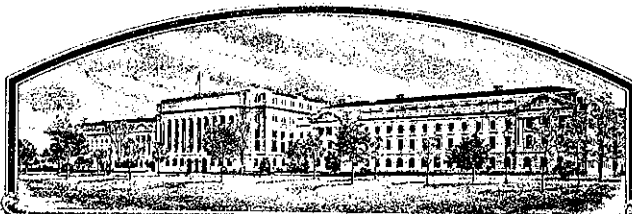


No.



7400099

# THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

**World Seeds, Incorporated**

Whereas, THERE HAS BEEN PRESENTED TO THE  
**Secretary of Agriculture**

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF *seventeen* YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. IN THE UNITED STATES SEED OF THIS VARIETY (1) SHALL BE SOLD BY VARIETY NAME ONLY AS CLASS OF CERTIFIED SEED AND (2) SHALL CONFORM TO THE NUMBER OF GENERATIONS SPECIFIED BY THE OWNER OF THE RIGHTS. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

WHEAT

'W. S. 1'

In Testimony Whereof, I have hereunto set  
my hand and caused the seal of the Plant  
Variety Protection Office to be affixed  
at the City of Washington  
this twelfth day of December in  
the year of our Lord one thousand nine  
hundred and seventy-five

Attest:

*L. J. Rollins*  
Commissioner  
Plant Variety Protection Office  
Grain Division  
Agricultural Marketing Service

*Earl L. Baty*  
Secretary of Agriculture

## APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

INSTRUCTIONS: See Reverse.

1. VARIETY NAME OR TEMPORARY DESIGNATION Variety name - <u>Yield 1</u> Temp. Designation-MP-1 B		2. KIND NAME Semi-hard White Spring Wheat	FOR OFFICIAL USE ONLY PVPO NUMBER <u>7400099</u>	
3. GENUS AND SPECIES NAME Triticum aestivum ssp. vulgare (Vill., Host) MacKey		4. FAMILY NAME (Botanical) Gramineae	FILING DATE 6.3.74	TIME 9:00 A.M.
6. NAME OF APPLICANT(S) World Seeds, Inc.		5. DATE OF DETERMINATION June, 1971	FEE RECEIVED \$ <u>750</u>	CHARGES
7. ADDRESS (Street and No. or R.F.D. No., City, State, and ZIP) 2605 Oceanside Blvd. Oceanside, California 92054		8. TELEPHONE AREA CODE AND NUMBER (714) 757-5647		
9. IF THE NAMED APPLICANT IS NOT A PERSON, FORM OF ORGANIZATION: (Corporation, partnership, association, etc.) Corporation		10. STATE OF INCORPORATION Minnesota	11. DATE OF INCORPORATION Aug. 1, 1972	
12. Name and mailing address of applicant representative(s), if any, to serve in this application and receive all papers: Mr. Alfredo Garcia Vice President - Research World Seeds, Inc. 2605 Oceanside Blvd. Oceanside, California 92054				

## 13. CHECK BOX BELOW FOR EACH ATTACHMENT SUBMITTED:

- ☒ 12A. Exhibit A, Origin and Breeding History of the Variety (See Section 52, P.L. 91-577)
- ☒ 12B. Exhibit B, Botanical Description of the Variety
- ☒ 12C. Exhibit C, Objective Description of the Variety
- ☒ 12D. Exhibit D, Data Indicative of Novelty
- ☒ 12E. Exhibit E, Statement of the Basis of Applicant's Ownership

The applicant declares that a viable sample of basic seed of this variety will be deposited upon request before issuance of a certificate and will be replenished periodically in accordance with such regulations as may be applicable. (See Section 52, P.L. 91-577).

- 14A. Does the applicant(s) specify that seed of this variety be sold by variety name only as a class of certified seed? (See Section 83(a), P.L. 91-577) (If "Yes," answer 14B and 14C below.) ☒ YES ☒ NO
- 14B. Does the applicant(s) specify that this variety be limited as to number of generations? ☒ YES ☒ NO
- 14C. If "Yes," to 14B, how many generations of production beyond breeder seed? 3

Applicant is informed that false representation herein can jeopardize protection and result in penalties.

The undersigned applicant(s) of this sexually-reproduced novel plant variety believes that the variety is distinct, uniform, and stable as required in Section 41 and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act (P.L. 91-577).

May 20, 1974

(DATE)

FORM GR-470 (REVERSE)

(DATE)

*Alfredo Garcia*  
(SIGNATURE OF APPLICANT)  
Vice President - Research and  
Chief Plant Breeder

(SIGNATURE OF APPLICANT)

(DATE)  
MAY 30 1974

Plant Variety Protection Act (P.V.P. 1930)

### INSTRUCTIONS

uniform and stable as required in section 41 and is entitled to protection under the provisions of section 42 of the  
The undersigned applicant(s) of this sexually-reproduced novel plant variety certifies that the variety is distinct

applicant is informed that these instructions apply to the following: **GENERAL: Send an original copy of the application, exhibits and \$50.00**

fee to U.S. Dept. of Agriculture, Consumer and Marketing Service, Grain  
Division, Hyattsville, Maryland 20782. Retain one copy for your files.

All items on the face of the form are self-explanatory unless noted  
below.

14b. Does the applicant(s) specify that this variety is a new or improved variety of a known variety? ☒ YES ☐ NO  
(See section 23(b) P.V.P. 1930) (If "YES", answer 14b and 14c below.)  
14c. Does the applicant(s) specify that seed of this variety be sold by applicant using only as a class of certified seed  
(See section 23(b) P.V.P. 1930)

and of a **ITEM** and will be reproduced periodically in accordance with such regulations as may be applicable  
The applicant declares that a viable sample of basic seed of this variety will be deposited upon request before issue

5. Insert the date the applicant determined that he had a new  
☒ 15e. Expiration of the Basis of Applicant's Ownership  
variety.

- ☒ 15d. Exhibit D: Data Indicating of Novelty  
12a. First, give the genealogy, including public and commercial  
varieties, lines, or clones used, and the breeding method.  
☒ 15c. Exhibit C: Collective Description of the Variety  
Second, give the details of subsequent stages of selection  
and multiplication. Third, indicate the type and frequency  
of variants during reproduction and multiplication and  
☒ 15b. Exhibit B: Botanical Description of the Variety  
state how these variants may be identified. Fourth, provide  
evidence on stability.  
☒ 15a. Exhibit A: Origin and Breeding History of the Variety (See section 23(b) P.V.P. 1930)

13. CHECK BOX BEFORE EACH ATTACHMENT IS SUBMITTED:

12b. First, give any special characteristics of the seed and of  
the plant as it passes through the seedling stage, flower-  
ing stage and the fruiting stage. Second, describe the  
mature plant and compare it with a similar commercial vari-  
ety grown under the same conditions, and indicate the differ-  
ences.

12c. A supplemental form will be furnished by the PVPO to de-  
scribe in detail a variety for each kind of seed.  
12d. Provide complete data indicative of novelty. Seed and  
plant specimens may be submitted and seeds submitted may  
be sterile. Where possible, include photographs of  
plant comparisons, chemical tests, etc.

12e. Indicate whether applicant is the actual breeder, the em-  
ployer of the breeder, the owner through purchase or in-  
heritance, etc.

NAME OF APPLICANT (PRINT NAME) WORLD SEEDS, INC.		ADDRESS (Street and No. of R.F.D. No. City, State and Zip) 5002 Occaside Blvd. Occaside, California 95024		DATE OF DETERMINATION JUNE 1974		FEE RECEIVED \$3.00	
ORGANIZATION (If applicant is a corporation, state name and address of corporation) MINNESOTA		DATE OF RECEIPT JUN 19 1974		SIGNATURE OF APPLICANT (Signature)		FILING DATE JUN 19 1974	
VARIETY NAME (Print name of variety) TEMP. DESIGNATION-MB-1 B		VARIETY NAME (Print name of variety) ARIZONA		VARIETY NAME (Print name of variety) SEMI-PALM WHITE SPRING		VARIETY NAME (Print name of variety) ARIZONA	
VARIETY NAME OF TEMPORARY DESIGNATION		VARIETY NAME OF TEMPORARY DESIGNATION		VARIETY NAME OF TEMPORARY DESIGNATION		VARIETY NAME OF TEMPORARY DESIGNATION	
INSTRUCTIONS: See Reverse		INSTRUCTIONS: See Reverse		INSTRUCTIONS: See Reverse		INSTRUCTIONS: See Reverse	

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

12A. Exhibit A. <sup>W.S.1</sup>  
~~World Book 1~~ Yield 1. <sup>RBE</sup>a. Type and Frequency of Variants.

<sup>W.S.1</sup>  
~~World Book 1~~  
Yield 1 is very homozygous for general field agronomic characteristics such as heading, ripening and height; therefore, no variants should be found during the multiplication process. Any off-types must be explained on the basis of mechanical mixtures during planting or harvesting. Natural hybrids may also appear during multiplication, but they can be explained on the basis of natural crosses of Yield 1 with other wheat varieties.

b. Evidence of Stability.

<sup>W.S.1</sup>  
~~World Book 1~~  
For evidence of the stability of Yield 1 you are referred to Tables 12D. (2) and 12D. (5) of this report. The agronomic characteristics of Yield 1 are very stable when grown either under irrigation or dry-land farming conditions.

W.S. 1  
(seed buds 1)  
276

Botanical Classification of World Seeds MP-1 B (= Yield 1) (1)

I. Plant Characters:

1. Maturity: Late season
2. Height: Mid-tall
3. Habit of growth: Spring habit

II. Stem Characters:

1. Color: White
2. Strength: Strong
3. Hollowness: Hollow

III. Spike Characters:

1. Awedness: Awed; awns white, average of extreme lengths, 100 mm.
2. Shape: Oblong
3. Density: Mid-dense
4. Position: Erect
5. Shattering: Resistant

IV.\* Glume Characters (glabrous):

1. Color: White
2. Length: Long
3. Width: Mid-wide

\* All of the observations in Items IV through XI were made on the central one-third of the spike. Kernel characteristics were observed only on those grains from the two largest florets in each spikelet.

## Botanical Classification

MP-1 B (= Yield 1) ~~(World Seed 1)~~ W.S. 1  
RHE

Page 2

V. Shoulder Characters:

1. Width: Narrow
2. Shape: Wanting

VI. Beak Characters:

1. Width: Narrow
2. Shape: Acuminate
3. Length: 7.6 mm. average (3.5 mm. minimum; 11.5 mm. maximum)

VII. Kernel Characters:

1. Color: White
2. Length: Mid-long (6.6 mm. average)
3. Texture: Semi-hard
4. Shape: Ovate

VIII. Germ Character:

1. Size: Mid-sized

IX. Crease Characters:

1. Width: Mid-wide
2. Depth: Deep

X. Cheek Character:

1. Shape: Rounded

7400099

Botanical Classification

MP-1 B (= Yield 1)

Page 3-

W.S.1  
NHE

XI. Brush Characters:

1. Size: Mid-size
2. Length: Large
3. Collar: Mostly non-collared (a few kernels with collar)

(1) Reference consulted:

BRIGGLE, L. W. and L. P. REITZ, 1963.  
Classification of Triticum species and of  
Wheat Varieties Grown in the United States.  
Technical Bulletin 1278, U. S. D. A.

Temporary Designation = MP-1 B

Variety Name = Yield 1

FORM APPROVED. OMB NO. 40-R3712

FORM GR-470-6

UNITED STATES DEPARTMENT OF AGRICULTURE

EXHIBIT C

(2-15-73)

AGRICULTURAL MARKETING SERVICE

GRAIN DIVISION

(Wheat)

HYATTSVILLE, MARYLAND 20782

OBJECTIVE DESCRIPTION OF VARIETY

WHEAT (TRITICUM SPP.)

INSTRUCTIONS: See Reverse.

NAME OF APPLICANT(S)

WORLD SEEDS, INC.

ADDRESS (Street and No. or R.F.D. No., City, State, and ZIP Code)

2605 Oceanside Blvd.

Oceanside, Calif. 92054

FOR OFFICIAL USE ONLY

PVPO NUMBER

7400099

VARIETY NAME OR TEMPORARY DESIGNATION

W.S. 1

Yield 1 (= MP-1 B)

Place the appropriate number that describes the varietal character of this variety in the boxes below.

Place a zero in first box (e.g. 0 8 9 or 0 9 ) when number is either 99 or less or 9 or less.

1. KIND:

1 = COMMON 2 = DURUM 3 = EMMER 4 = SPELT 5 = POLISH 6 = POULARD 7 = CLUB

2. TYPE:

1 = SPRING 2 = WINTER 3 = OTHER (Specify) Intermediate 3 = SOFT 2 = HARD

1 = WHITE 2 = RED 3 = OTHER (Specify)

3. SEASON - NUMBER OF DAYS FROM EMERGENCE TO:

0 4 9 FIRST FLOWERING 0 5 9 LAST FLOWERING

4. MATURITY (50% Flowering):

NO. OF DAYS EARLIER THAN 1 = ARTHUR 2 = SCOUT 3 = CHRIS  
0 7 NO. OF DAYS LATER THAN 3 4 = LEMHI 5 = NUGAINES 6 = LEEDS

5. PLANT HEIGHT (From soil level to top of head):

0 7 8 CM. HIGH 1 = ARTHUR 2 = SCOUT 3 = CHRIS  
CM. TALLER THAN 4 = LEMHI 5 = NUGAINES 6 = LEEDS  
1 1 CM. SHORTER THAN 3

6. PLANT COLOR AT BOOTING (See reverse):

3 1 = YELLOW GREEN 2 = GREEN 3 = BLUE GREEN

7. ANTHUR COLOR:

1 1 = YELLOW 2 = PURPLE

8. STEM:

1 Anthocyanin: 1 = ABSENT 2 = PRESENT 2 Waxy bloom: 1 = ABSENT 2 = PRESENT  
2 Hairiness of last internode of rachis: 1 = ABSENT 2 = PRESENT 1 Internodes: 1 = HOLLOW 2 = SOLID  
0 4 NO. OF NODES (Originating from node above ground) 0 9 CM. INTERNODE LENGTH BETWEEN FLAG LEAF AND LEAF BELOW

9. AURICLES:

1 Anthocyanin: 1 = ABSENT 2 = PRESENT 2 Hairiness: 1 = ABSENT 2 = PRESENT

10. LEAF:

2 Flag leaf at booting stage: 1 = ERECT 2 = RECURVED 2 Flag leaf: 1 = NOT TWISTED 2 = TWISTED  
3 = OTHER (Specify): 2 Waxy bloom of flag leaf sheath: 1 = ABSENT 2 = PRESENT  
1 Hairs of first leaf sheath: 1 = ABSENT 2 = PRESENT  
1 4 MM. LEAF WIDTH (First leaf below flag leaf) 3 2 CM. LEAF LENGTH (First leaf below flag leaf):

## 11. HEAD:

☐ 3 Density: 1 = LAX 2 = DENSE 3 = Mid-dense ☐ 2 Shape: 1 = TAPERING 2 = STRAP 3 = CLAVATE  
4 = OTHER (Specify) \_\_\_\_\_

☐ 4 Awedness: 1 = AWNLESS 2 = APICALLY AWNLETED 3 = AWNLETED 4 = AWNED

☐ 1 Color at maturity: 1 = WHITE 2 = YELLOW 3 = PINK 4 = RED  
5 = BROWN 6 = BLACK 7 = OTHER (Specify) \_\_\_\_\_

☐ 1 ☐ 5 CM. LENGTH ☐ 0 ☐ 1.6 MM. WIDTH

## 12. GLUMES AT MATURITY:

☐ 3 Length: 1 = SHORT (CA. 7 mm.) 2 = MEDIUM (CA. 8 mm.) 3 = LONG (CA. 9 mm.)  
☐ 2 Width: 1 = NARROW (CA. 3 mm.) 2 = MEDIUM (CA. 3.5 mm.)  
3 = WIDE (CA. 4 mm.)

☐ 1 Shoulder: 1 = WANTING 2 = OBLIQUE 3 = ROUNDED  
shape: 4 = SQUARE 5 = ELEVATED 6 = APICULATE ☐ 3 Beak: 1 = OBTUSE 2 = ACUTE 3 = ACUMINATE

## 13. COLEOPTILE COLOR:

☐ 1 1 = WHITE 2 = RED 3 = PURPLE

## 14. SEEDLING ANTHOCYANIN:

☐ 1 1 = ABSENT 2 = PRESENT

## 15. JUVENILE PLANT GROWTH HABIT:

☐ 3 1 = PROSTRATE 2 = SEMI-ERECT 3 = ERECT

## 16. SEED:

☐ 1 Shape: 1 = OVATE 2 = OVAL 3 = ELLIPTICAL

☐ 1 Cheek: 1 = ROUNDED 2 = ANGULAR

☐ 2 Brush: 1 = SHORT 2 = MEDIUM 3 = LONG

☐ 1 Brush: 1 = NOT COLLARED 2 = COLLARED

☐ 4 Phenol reaction 1 = IVORY 2 = FAWN 3 = LT. BROWN  
(See instructions): 4 = BROWN 5 = BLACK

☐ 1 Color: 1 = WHITE 2 = AMBER 3 = RED 4 = PURPLE 5 = OTHER (Specify) \_\_\_\_\_

☐ 6.6 MM. LENGTH ☐ 0 ☐ 3.5 MM. WIDTH ☐ 3 ☐ 9 GM. PER 1000 SEEDS

## 17. SEED CREASE:

☐ 2 Width: 1 = 60% OR LESS OF KERNEL 'WINOKA'  
2 = 80% OR LESS OF KERNEL 'CHRIS'  
3 = NEARLY AS WIDE AS KERNEL 'LEMHI'

☐ 4 Depth: 4 = 50% or more of kernel  
1 = 20% OR LESS OF KERNEL 'SCOUT'  
2 = 35% OR LESS OF KERNEL 'CHRIS'  
3 = 50% OR LESS OF KERNEL 'LEMHI'

## 18. DISEASE: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

☐ 2 STEM RUST (Races) ☐ 1 LEAF RUST (Races) ☐ 0 STRIPE RUST (Races) ☐ 0 LOOSE SMUT  
☐ 0 POWDERY MILDEW ☐ 0 BUNT ☐ OTHER (Specify) \_\_\_\_\_

## 19. INSECT: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

☐ 0 SAWFLY ☐ 0 APHID (Bydv.) ☐ 0 GREEN BUG ☐ 0 CEREAL LEAF BEETLE  
☐ 1 OTHER (Specify) (\*) Black Point HESSIAN FLY  
(\*) See attached information. RACES: ☐ 0 GP ☐ A ☐ B ☐ C  
☐ 0 D ☐ E ☐ F ☐ G

## 20. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED:

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant tillering		Seed size	
Leaf size		Seed shape	
Leaf color		Coleoptile elongation	
Leaf carriage		Seedling pigmentation	

## INSTRUCTIONS

GENERAL: The following publications may be used as a reference aid for the standardization of terms and procedures for completing this form:

- (a) L.W. Briggie and L. P. Reitz, 1963, Classification of Triticum Species and Wheat Varieties Grown in the United States, Technical Bulletin 1278, United States Department of Agriculture.
- (b) W.E. Walls, 1965, A Standardized Phenol Method for Testing Wheat Seeds for Varietal Purity, contribution No. 28 to the handbook of seed testing prepared by the Association of Official Seed Analysts. (See attachment.)

LEAF COLOR: Nickerson's or any recognized color fan should be used to determine the leaf color of the described variety.

7400099

Exhibit 12D.(10) Novelty. (Comparison with most similar variety)

Comparison of Characters of  
W.S. 1 Spring Wheat and Gaines Winter Wheat

	<u>Similar</u>	<u>Contrasting</u>	
		<u>W. S. 1</u>	<u>Gaines</u>
<u>Plant Characters:</u>			
Maturity		Late	Mid-season
Height	Semi-dwarf		
Habit of growth		Spring	Winter
<u>Stem Characters:</u>			
Color	White		
Strength	Strong		
Hollowness	Hollow		
<u>Spike Characters:</u>			
Awedness	Awed		
Awn Color	White		
Awn Length		100 mm.	20-80 mm.
Shape	Oblong		
Density	Mid-dense		
Position		Erect	Inclined
<u>Glume Characters:</u>			
Glabrous	Glabrous		
Color	White		
Length	Long		
Width	Mid-wide		

7400099

	<u>Similar</u>	<u>Contrasting</u>	
		<u>W.S. 1</u>	<u>Gaines</u>
<u>Shoulder Characters:</u>			
Width	Narrow		
Shape		Wanting	Oblique to Rounded
<u>Beak Characters:</u>			
Width		Narrow	Mid-wide
Shape	Acuminate		
Length		3.5-11.5 mm.	2-4 mm.
<u>Kernel Characters:</u>			
Color	White		
Length	Mid-long		
Texture		Semi-hard	Soft
Shape	Ovate		
<u>Germ Character:</u>			
Size		Mid-sized	Small
<u>Crease Characters:</u>			
Width	Mid-wide		
Depth		Deep	Shallow
<u>Cheek Character:</u>			
Shape	Rounded		
<u>Brush Characters:</u>			
Size	Mid-sized		
Length		Long	Mid-long

7400099

W.S. 1 *WHE*

12E. Exhibit E, Statement of the Basis of Applicant's Ownership.

The applicant is the employer of the breeder.

'W.S.1' KMG

Origin and Breeding History of ~~Yield-1~~

A. Origin:

This late-maturing, white-grained spring wheat variety originated from a cross made in 1964-1965 at CIANO Agricultural Research Center located at Cd. Obregon, Sonora, Mexico.

B. Breeding History, Followed Step-by-Step:

1. Cross:

The cross was made between two F1s as indicated below:

(F1, El Gaucho x Sonora 64) x (F1, Siete Cerros 66 x Napo 63)

a. Origin of Parents:

1). El Gaucho - a tall straw Argentine variety. We have not been able to find out which are the parents of this variety.

2). Sonora 64 - the first early and semi-dwarf wheat with good quality released in Mexico in 1964. The parents are:

(Yaktana 54 x Norin 10-Baart) x Yaqui 54<sup>2</sup>.

3). Siete Cerros 66 - a high yielding and semi-dwarf white-grained variety released in Mexico in 1966. This variety and its red-grained sister, Super X, and other selections are known under the following names throughout the world: 8156, Kalyansona, S-227, PV-18, Indus 66, Mexipak 65, Laketch, Espigas, etc. The parents of Siete Cerros 66 were crossed as indicated below:

[(II-50-18, Frontana-K58 x Newthatch) x Norin 10-Baart] x Gabo 55.

It should be mentioned that the first line of the above cross (that is, Fn. -K58 x N) came out of the University of Minnesota along with a sister line known as II-50-17. These two wheats are probably the best breeding lines that ever came out of the University of Minnesota. They are tall but have strong straw, are susceptible to shattering, resistant to most races of leaf and stem rusts prevalent in North America and have good tolerance to leaf spots, particularly Septoria spp.

These two lines have played an important role in World Seeds breeding program.

4). Napo 63. This is a Colombian variety, and because it is resistant to yellow stripe rust, P. glumarum, it is also being grown in Ecuador. Its parents were crossed in the following direction:

(Frocor x Frontana) x (Yaqui 48 x Narino Sib.)

2. F1 Generation:

This generation was grown at CIANO Agricultural Research Center in 1965-1966 and harvested in Bulk in May of 1966.

3. F2 Generation:

A small portion of the F2 Bulk harvested in CIANO in May of 1966 was shipped and planted in June in Grand Forks, North Dakota, in six rows, 22' x 22" each. After planting, the following cross number was assigned to this particular combination:

F2 Bulk: 6W00890

According to World Seeds cross numbering system, we allowed room for 99,999 possible crosses between bread and durum wheats. The 6W in the above number indicates that we are dealing with hexaploid, or bread wheats. Following the PEDIGREE METHOD of individual plants or head selections, we pulled nine single plants out of this cross. Out of those nine plants we discarded one because of poor seed development, and eight were saved.

4. F3 Generation:

Out of the eight plants selected, we are here concerned with Plant #5 only, so the pedigree for the F3 is written as:

F3, 6W00890-25,

where "Number 2" stands for selections made under North Dakota conditions.

Each F3 plant harvested in Grand Forks was seeded in Salinas, California, in 1966-1967. Plant #5 was seeded in four rows, 10' x 2" each. We selected 29 single plants out of this population.

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5. F4 Generation:

The 29 individual F4 plants were planted in Gonzales, California, in 1967-1968. Since further selections were made out of Plant #1, the pedigree for the F4 is written below:

F4, 6W00890-25-11,

Where "Number 1" stands for selections made under California (Holtville) conditions.

Plant #1 was seeded with a special group of "Early Generation Progenitors" in two rows, 10' x 12" each. Out of these two rows we selected four individual plants.

6. F5 Generation:

The four individual F5 plants were kept in the Salinas, California, office in 1968 and in 1968-1969. They were planted in Grand Forks, North Dakota, in 1969. Each plant was seeded in four rows, 20' x 22" each, placing approximately 80 seeds per row. Since further selections were made out of Plant #2, the F5 pedigree can be written down as follows:

F5, 6W00890-25-11-12

From the four rows planted to Plant #2, we selected two individual plants.

7. F6 Generation:

The two F6 single plants were seeded in Holtville, California, in 1969-1970. Each plant was seeded in three rows, 20' x 14" each, placing about 80 kernels per row. Further selections were made on Plant #2, so the pedigree stands as follows:

F6, 6W00890-25-11-12-21

Only one single plant was pulled out of Selection #2.

8. F7 and F8 Generations:

Seed of the single F7 plant was seeded in Grand Forks, North Dakota, in 1970 in four rows, 22' x 20" each. Since only one plant was selected the previous generation, the pedigree is written below:

F7, 6W00890-25-11-12-21-11

We observed that the four rows were homozygous for height, maturity and rust reactions, so they were bulked in order to test its grain yield potential. The final pedigree of this line submitted under the official name of Yield 1 is as follows:

F8 Bulk, 6W00890-25-11-12-21-11-2B,

where the letter "B" stands for "Bulk."

a. Preliminary grain yield information.

Seed obtained from Grand Forks, North Dakota, in 1970 was utilized to plant replicated yield trials under irrigation in Holtville, California, in 1970-1971. It was from the results of this first trial that we decided that this particular line had strong possibilities of becoming a variety. Further work, as well as a summary of the breeding history as outlined previously, is summarized in the following table.